

THE SOUTH AFRICAN MUSEUM'S *MEIRING NAUDE* CRUISES

PART 5

CRUSTACEA, DECAPODA, REPTANTIA AND NATANTIA

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(With 16 figures)

[MS. accepted 10 May 1977]

ABSTRACT

Sixty-one species of Reptantian and Natantian decapod crustaceans from deep water off Natal are listed. Of the thirteen new records of Natantia dealt with from the area, three are described as new species. These are *Benthesicymus expansus*, *Hymenopenaeus kannemeyeri* and *Pasiphaea meiringnaudei*.

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INTRODUCTION

The present paper forms part of a series based on material collected by the South African Museum during two cruises off the Natal coast, on the R/V *Meiring Naude* (see Fig. 1). For the scope of, and the background to, this programme, as well as for all station data, the reader is referred to Louw (1977).

All the species of Reptantia and Natantia collected are listed systematically, but only new species, new records for South Africa, and a few additional species requiring further comment are dealt with in the systematic text.

The following abbreviations are used throughout this paper: SAM—South African Museum catalogue number; SM—*Meiring Naude* station numbers; CB—carapace breadth; CL—carapace length; RL—rostral length; TL—total length; ovig.—ovigerous; juv.—juvenile.

SPECIES LIST

Where specimens are not identified to species level, these were either immature or damaged.

* New record for South African waters.

	SM Station no.	♂♂	♀♀	ovig. ♀♀	juv.
PALINURA					
Family Eryonidae					
<i>Stereomastis sculpta</i> (Smith)	58	—	—	1	—
(Barnard 1950: 572)	83	1	—	—	—
(<i>Eryoneicus caecus</i>)	107	—	—	—	1

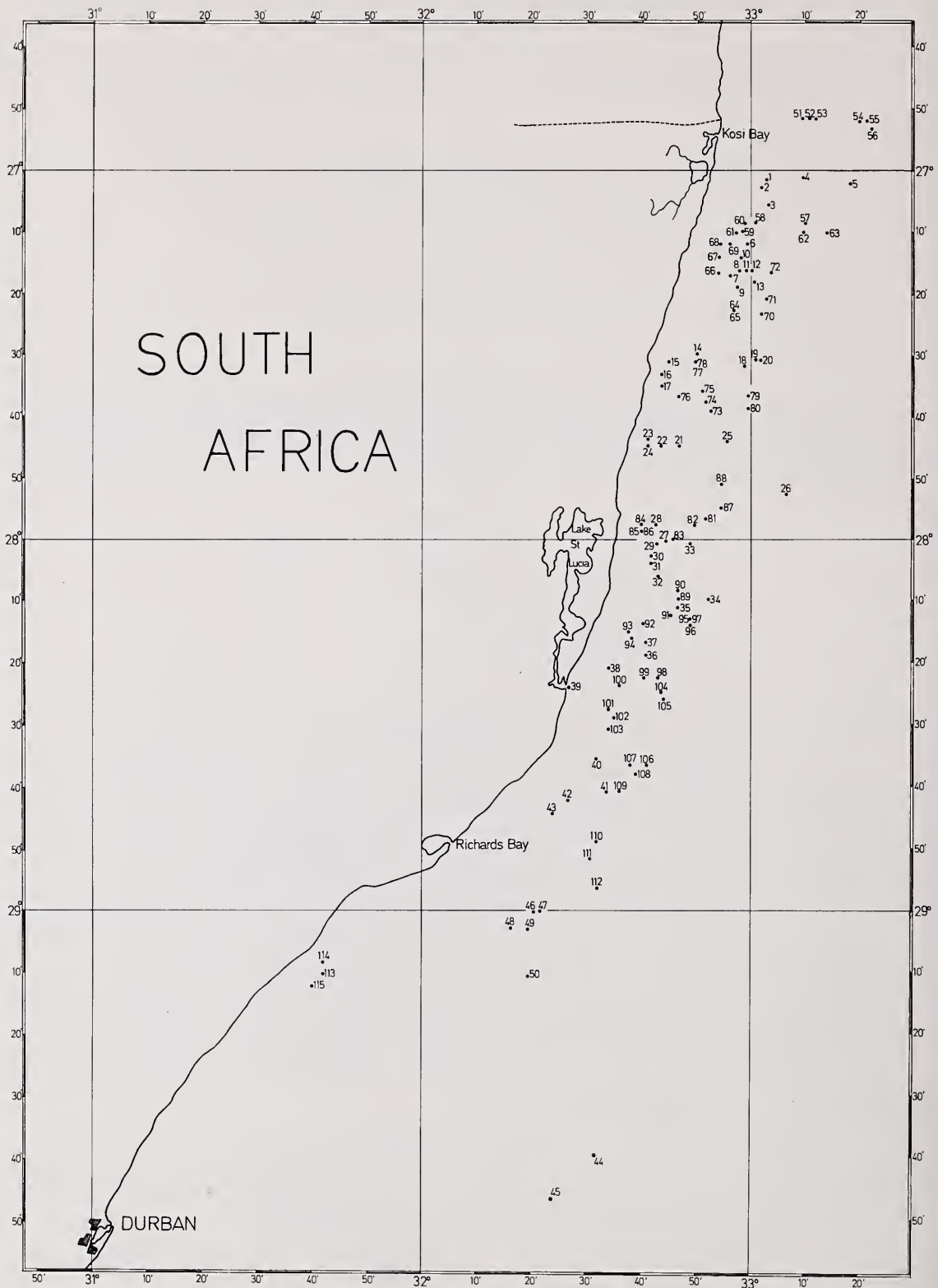


Fig. 1. Map showing localities of collecting stations.

	SM Station no.	♂♂	♀♀	ovig. ♀♀	juv.
Family Palinuridae					
<i>Palinurus delagoae</i> Barnard	22	1	—	—	—
(Berry & Plante 1973: 374)					
<i>Projasus parkeri</i> (Stebbing)	38	—	—	—	1
(George & Grindley 1964: 87)					
ASTACURA					
Family Astacidae					
<i>Nephropsis atlantica</i> Norman	38	3	2	—	—
(Barnard 1950: 530)	66	3	—	1	—
NATANTIA PENAEIDEA					
Family Penaeidae					
Subfamily Sicyoninae					
<i>Sicyonia longicauda</i> Rathbun	86	—	1	—	—
(Barnard 1950: 635)					
Subfamily Aristeinae					
<i>Aristaeomorpha foliacea</i> (Risso)	7	1	2	—	—
(Barnard 1950: 625)	22	2	4	—	—
	28	1	—	—	—
	38	3	3	—	—
	44	—	2	—	—
	66	—	1	—	—
	83	1	—	—	—
	92	—	2	—	—
	99	1	—	—	—
	100	3	3	—	—
* <i>Aristeus semidentatus</i> (Bate)	107	12	—	—	—
(see systematic section, p. 20)					
* <i>Aristeus virilis</i> (Bate)	58	2	—	—	—
(see systematic section, p. 21)	91	1	—	—	—
	107	—	1	—	—
* <i>Benthescymus expansus</i> sp. nov.	107	1	—	—	—
(see systematic section, p. 22)					
* <i>Benthescymus investigatoris</i> Alcock & Anderson	38	—	1	—	—
(see systematic section, p. 26)	58	—	1	—	—
	66	—	1	—	—
	107	—	2	—	—
<i>Gennadas bouvieri</i> Kemp	55	—	1	—	—
(Kensley 1971b: 273)	56	1	—	—	—
	63	—	4	—	—
	88	—	1	—	—
	105	—	1	—	—
	111	—	1	—	—
<i>Gennadas capensis</i> Calman	99	—	1	—	—
(Kensley 1971b: 277)	105	1	1	—	—
<i>Gennadas clavicornis</i> De Man	55	1	1	—	—
(Kensley 1971b: 278)	63	—	1	—	—
	88	—	1	—	—
	96	1	1	—	—
	105	—	1	—	—
	111	3	—	—	—
<i>Gennadas gilchristi</i> Calman	25	—	3	—	—
(Kensley 1971b: 280)	33	2	4	—	—
	49	—	2	—	—
	55	3	4	—	—

	SM Station		ovig.		juv.
	no.	♂♂	♀♀	♀♀	
	56	15	12	—	—
	63	—	6	—	—
	88	9	4	—	—
	96	—	3	—	—
	97	5	3	—	—
	105	11	8	—	—
	111	3	1	—	—
	112	7	3	—	—
	25	1	—	—	—
	56	2	—	—	—
	63	5	3	—	—
	105	—	1	—	—
	111	1	1	—	—
	112	1	—	—	—
<i>Gennadas parvus</i> Bate	25	1	—	—	—
(Kensley 1971b: 287)	33	—	1	—	—
	56	1	—	—	—
	63	—	2	—	—
	88	—	1	—	—
	97	1	—	—	—
	105	—	1	—	1
	112	3	—	—	—
<i>Gennadas scutatus</i> Bouvier	56	1	1	—	—
(Kensley 1971b: 288)	71	—	1	—	—
	88	2	4	—	—
	96	2	1	—	—
	105	—	2	—	—
	111	1	—	—	—
	112	1	1	—	—
<i>Gennadas tinayrei</i> Bouvier	56	1	1	—	—
(Kensley 1971b: 290)	63	3	—	—	—
	88	5	—	—	—
	96	2	1	—	—
<i>Plesiopenaeus edwardsianus</i> (Johnson)	7	—	1	—	—
(Crosnier & Forest 1973: 292)	28	1	—	—	—
	38	—	3	—	—
	58	1	1	—	—
	74	2	—	—	—
	107	1	—	—	—
<i>Plesiopenaeus nitidus</i> Barnard	7	3	4	—	—
(Barnard 1950: 622)	22	1	7	—	—
	28	1	1	—	—
	31	—	1	—	—
	38	3	5	—	—
	58	3	7	—	—
	66	2	2	—	—
	83	1	7	—	—
	92	—	2	—	—
	99	—	1	—	—
	107	7	34	—	—
Subfamily Solenocerinae					
<i>Haliporoides triarthrus</i> (Stebbing)	22	5	3	—	—
(Barnard 1950: 619)	92	1	—	—	—
* <i>Hymenopenaeus kannemeyeri</i> sp. nov.	38	1	1	—	—
(see systematic section, p. 27)					
<i>Hymenopenaeus</i> sp.	7	1	—	—	—

	SM Station no.	♂♂	♀♀	ovig. ♀♀	juv.
Subfamily Penaeinae					
* <i>Funchalia villosa</i> (Bouvier)	18	—	1	—	—
(see systematic section, p. 29)	33	—	1	—	—
	88	1	1	—	—
	111	1	—	—	—
<i>Parapenaeopsis acclivirostris</i> Alcock	115	—	2	—	—
(Barnard 1950: 604)					
<i>Penaeopsis rectacuta</i> (Bate)	15	3	11	—	—
(Hall 1962: 18)					
<i>Penaeus indicus</i> Edwards	114	1	—	—	—
(Barnard 1950: 588)					
Family Sergestidae					
<i>Sergestes (Sergestes) armatus</i> Kröyer	18	—	1	—	—
(Kensley 1971a: 232)	33	2	2	—	—
	49	1	1	—	—
	55	1	2	—	—
	56	—	1	—	—
	63	2	—	—	—
	88	2	3	—	—
	96	—	2	—	—
	105	—	1	—	—
<i>Sergestes (Sergestes) atlanticus</i> Edwards	56	—	1	—	—
(Kensley 1971a: 234)	63	1	11	—	—
	88	2	3	—	—
	105	1	1	—	—
	111	1	—	—	—
	112	3	1	—	—
<i>Sergestes (Sergestes) curvatus</i> Crosnier & Forest	5	—	1	—	1
(Crosnier & Forest 1973: 315)	18	—	2	—	—
	25	3	—	—	—
	33	1	1	—	—
	49	1	1	—	—
	55	1	—	—	—
	56	1	2	—	—
	63	2	—	—	—
	88	1	—	—	—
	97	—	1	—	—
	111	2	1	—	—
	112	1	2	—	—
<i>Sergestes (Sergestes) orientalis</i> Hansen	55	—	3	—	—
(Kensley 1971a: 238)	88	—	3	—	—
	96	1	2	—	—
	97	1	1	—	—
	105	1	—	—	—
	112	3	1	—	—
<i>Sergestes (Sergestes) sargassi</i> Ortmann	25	—	1	—	—
(Kensley 1971a: 241)	56	—	1	—	—
	63	1	—	—	—
	88	1	—	—	—
	105	1	—	—	—
	111	—	2	—	—
	112	1	—	—	—
<i>Sergestes (Sergestes) pectinatus</i> Sund	88	1	1	—	—
(Kensley 1971a: 240)	96	2	—	—	—
	111	—	2	—	—
	112	1	1	—	—

	SM Station no.	♂♂	♀♀	ovig. ♀♀	juv.
<i>Sergestes (Sergia) laminatus</i> Burkenroad . (Kensley 1971a: 251)	56	2	—	—	—
	88	3	4	—	—
	97	4	1	—	—
	105	5	5	—	—
	111	1	2	—	—
	112	1	3	—	—
<i>Sergestes (Sergia) potens</i> Burkenroad . (Kensley 1971a: 253)	7	—	2	—	—
<i>Sergestes (Sergia) prehensilis</i> Bate . (Kensley 1971a: 253)	5	—	2	—	—
	18	—	2	—	—
	25	13	19	—	—
	33	2	5	—	—
	49	1	—	—	—
	55	1	1	—	—
	56	3	—	—	—
	63	5	1	—	—
	67	1	2	—	—
	88	4	4	—	—
	96	7	2	—	—
	97	2	2	—	—
	105	3	3	—	—
	111	1	1	—	—
112	7	3	—	—	
<i>Sergestes (Sergia) regalis</i> Gordon . (Kensley 1971a: 256)	25	—	1	—	—
	55	—	1	—	—
	56	1	—	—	—
	88	—	1	—	—
	96	1	—	—	—
	99	—	1	—	—
	112	—	1	—	—
<i>Sergestes (Sergia) scintillans</i> Burkenroad . (Kensley 1971a: 257)	25	1	—	—	—
	88	1	2	—	—
	96	1	1	—	—
	105	3	—	—	—
	112	2	4	—	—
<i>Sergestes (Sergia) splendens</i> Sund . (Kensley 1971a: 260)	88	2	—	—	—
	96	—	2	—	—
* <i>Sergestes (Sergia) talismani</i> Barnard . (see systematic section, p. 31)	55	2	2	—	—
	63	—	1	—	—
	88	4	—	—	—
	97	—	1	—	—
	112	—	3	—	—
NATANTIA CARIDEA					
Family Oplophoridae					
* <i>Acanthephyra armata</i> Edwards . (see systematic section, p. 31)	38	4	4	—	—
	58	3	3	—	—
<i>Acanthephyra eximia</i> Smith . (Crosnier & Forest 1973: 34)	3	—	1	—	—
	38	—	8	—	—
	44	—	1	—	—
	58	3	5	—	—
	99	—	1	—	—
	107	1	1	—	—
* <i>Acanthephyra indica</i> Balss . (see systematic section, p. 31)	56	1	—	—	—
	88	—	—	1	—
	96	—	1	—	—
	105	2	—	—	1

	SM Station			ovig.	juv.
	no.	♂♂	♀♀	♀♀	
	111	—	—	1	—
	112	—	—	1	—
<i>Acanthephyra quadrispinosa</i> Kemp	5	—	1	1	—
(Barnard 1950: 668)	18	2	2	2	—
	25	1	3	18	—
	33	3	7	7	—
	49	3	5	5	—
	55	5	1	—	9
	56	7	—	5	20
	63	1	7	10	10
	88	3	4	2	14
	96	3	—	1	2
	97	3	1	1	4
	105	4	1	—	8
	111	7	1	—	7
	112	3	—	2	19
<i>Oplophorus gracilirostris</i> Edwards	33	1	—	—	—
(Chace 1936: 30)	63	1	—	—	—
<i>Oplophorus spinicauda</i> Edwards	18	—	1	—	3
(Kensley 1969: 169)	25	—	2	—	—
	56	—	—	1	—
	111	—	2	—	1
	112	—	3	—	1
<i>Oplophorus spinosus</i> (Brullé)	33	—	2	—	1
(Crosnier & Forest 1973: 25)	25	—	—	—	1
<i>Systellaspis debilis</i> (Edwards)	5	1	—	4	—
(Crosnier & Forest 1973: 87)	18	4	2	1	—
	25	13	10	14	—
	33	7	3	3	—
	49	5	4	1	—
	55	3	—	1	—
	56	—	1	1	—
	63	—	1	—	—
	88	—	—	—	1
	105	—	—	—	1
	111	2	—	1	—
	112	1	—	1	5
Family Nematocarinidae					
<i>Nematocarinus</i> sp.	7	1	—	—	—
	38	1	—	—	—
	66	—	—	1	—
	90	1	—	—	—
	92	—	—	1	—
Family Pasiphaeidae					
* <i>Eupasiphae gilesii</i> Wood-Mason	105	1	—	—	—
(see systematic section, p. 32)					
* <i>Pasiphaea sivado</i> (Risso)	63	—	2	—	—
(see systematic section, p. 32)	85	—	1	—	—
* <i>Pasiphaea meiringnaudei</i> sp. nov.	28	—	1	—	—
(see systematic section, p. 34)	38	1	—	—	—
	40	—	2	—	—
	58	4	—	—	—
	91	—	1	—	—
	107	—	—	5	—
Family Hippolytidae					
<i>Hippolysmata tugelae</i> Stebbing	115	—	—	1	—
(Barnard 1950: 712)					

	SM Station no.	♂	♀	ovig. ♀♀	juv.
Family Pandalidae					
<i>Heterocarpus dorsalis</i> Bate	7	1	—	—	—
(see systematic section, p. 38)	28	—	1	—	—
	38	2	1	—	—
	75	1	—	—	—
	83	3	—	—	—
<i>Heterocarpus laevigatus</i> Bate	38	—	1	—	—
(see systematic section, p. 38)	66	1	—	—	—
	99	1	1	1	—
<i>Heterocarpus tricarinatus</i> Alcock & Anderson .	22	—	1	1	—
(see systematic section, p. 38)					
<i>Parapandalus richardi</i> (Coutière)	56	1	—	—	—
	63	1	—	—	—
	88	1	—	—	—
	111	1	—	1	—
<i>Plesionika martia</i> (Edwards)	7	1	1	—	—
(Crosnier & Forest 1973: 212)	22	—	—	2	—
	38	2	1	2	—
	58	—	—	1	—
	66	2	1	2	—
	83	—	—	2	—
	100	—	—	1	—
Family Glyphocrangonidae					
<i>Glyphocrangon dentatus</i> Barnard	22	—	—	8	—
(see systematic section, p. 40)	28	1	—	—	—
	38	1	—	—	—
	66	5	1	—	—
	100	1	—	—	—
* <i>Glyphocrangon regalis</i> Bate	7	1	1	1	—
(see systematic section, p. 40)	28	—	—	1	—
	38	1	2	4	—
	44	1	—	—	—
	58	—	1	—	—
	74	1	—	—	—
	83	1	3	1	—
	92	—	—	2	—
	99	—	1	—	—
Family Crangonidae					
<i>Pontophilus sculptus</i> (Bell)	86	—	1	—	—
(Barnard 1950: 810)					

SYSTEMATIC DISCUSSION

(new species, new records, and selected other species)

PENAEIDEA

Family Penaeidae

Aristeus semidentatus (Bate)

Figs 2A, 3A

Hemipenaeus semidentatus Bate, 1888: 305, pl. 49 (fig. 1).*Aristaeus semidentatus*: Wood-Mason & Alcock, 1891: 280. Alcock, 1901: 31. Alcock & McArdle, 1901: pl. 49 (fig. 3).*Aristeus semidentatus*: De Man, 1911: 29.

Previous records

Laccadive Islands; Cape Comorin; Bay of Bengal; off Banda; Kei Islands; Kermadec Islands.

Material

SAM-A15139 SM 107 12 ♂♂ CL + RL 26,8 mm × TL 77,0 mm to
CL + RL 31,5 mm × 92,0 mm

Remarks

The genus *Aristeus* is characterized by the lack of an hepatic spine, an indistinct cervical groove, the third pereopods possessing an epipodite but no podobranch, the fourth pereopods lacking an epipodite, the exopodite of the second maxilliped longer and stronger than the exopodite of the third maxilliped.

There is some variation in the rostral dentition of the present material, several specimens showing a small dorsal and ventral tooth close to the apex (Fig. 2A). (Burucovsky & Romensky 1972, also describe rostral variability in *Aristeus varidens*.)

Aristeus virilis (Bate)

Figs 2B, 3B

Hemipenaeus virilis Bate, 1888: 303, pl. 44 (fig. 4).

Hemipenaeus tomentosus Bate, 1888: 307, pl. 49 (figs 2-3).

Aristaeus virilis: Wood-Mason & Alcock, 1891: 279. Alcock, 1901: 30.

Aristeus virilis: De Man, 1911: 27.

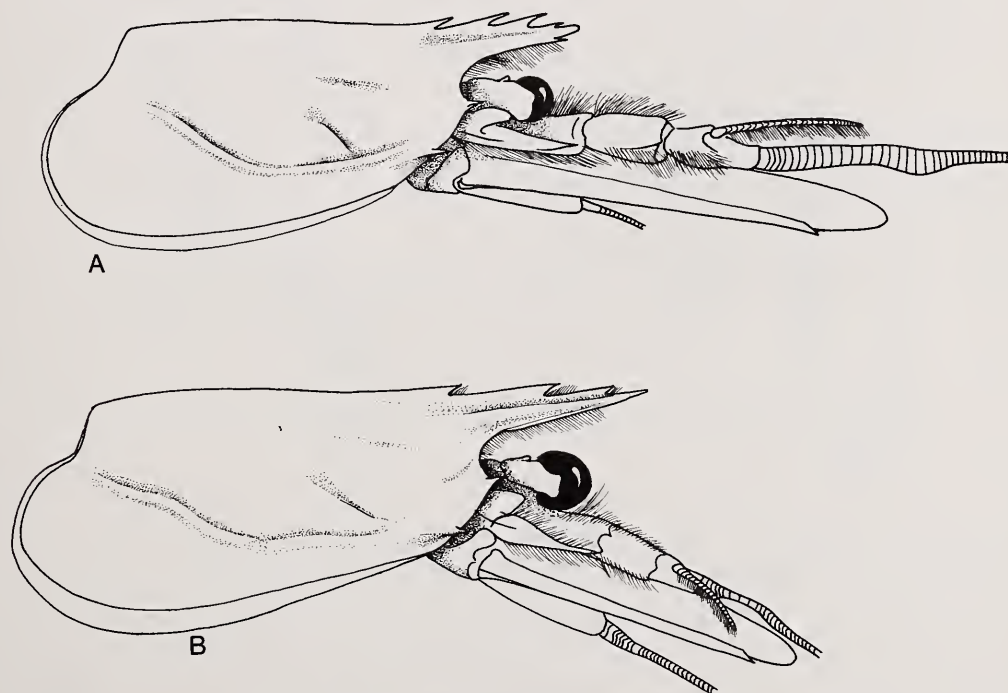


Fig. 2. A. *Aristeus semidentatus*. B. *Aristeus virilis*.

Previous records

Andaman Sea; China Sea; Philippines; Bali Sea; New Hebrides.

Material

SAM-A15159 SM 58 2 ♂♂ CL 41,2 mm × TL 110,5 mm; 37,0 mm × ± 95 mm (telson damaged)

SAM-A15160 SM 91 1 ♂ 43,0 mm × 109,0 mm

SAM-A15161 SM 107 1 ♀ (rostrum damaged)

Remarks

The present material shows the characteristic thickening of the distal part of the scaphocerite, but the males lack the pubescence of the integument. A twist in the base of the inner antennular flagellum is also present. The two species of *Aristeus* dealt with here may be distinguished by the differences in the petasmata (Fig. 3) and rostra (Fig. 2), and the pubescent carapace of some specimens of *A. virilis*.

Benthesicymus expansus sp. nov.

Figs 4-5

*Description**Male*

Carapace (Fig. 4A) integument soft, membranous. Rostrum an entire crest, apex missing in holotype, ventral border bearing slight ridge carrying setae. No

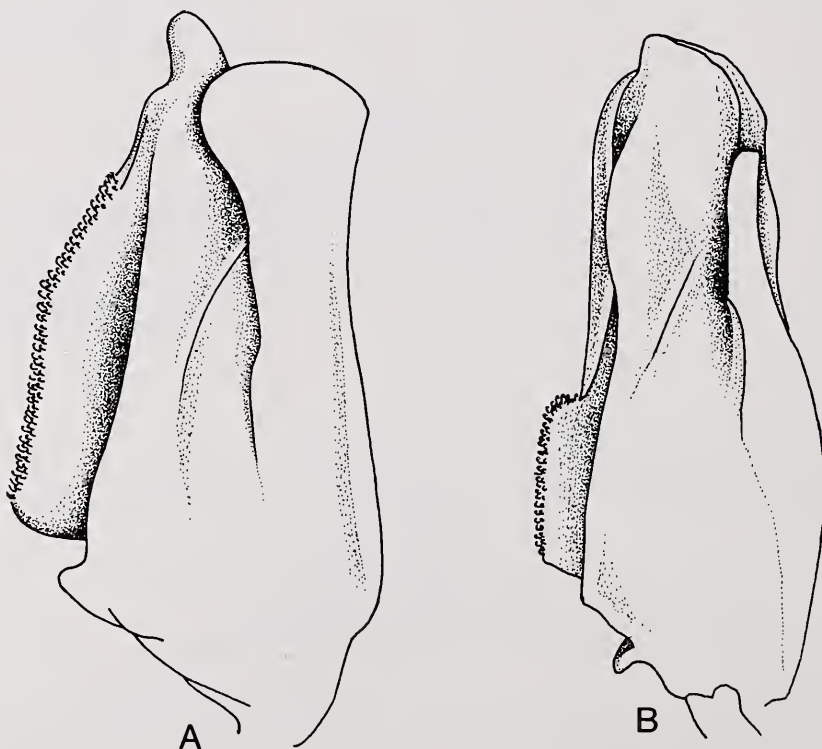


Fig. 3. A. *Aristeus semidentatus* petasma. B. *Aristeus virilis* petasma.

antennal spine; orbitoantennal groove extended posteroventrally to branchial region; rounded ridge situated above orbitoantennal groove; branchiostegal spine small, supported by short carina, no hepatic spine; cervical groove strong, almost reaching orbitoantennal groove; suprabranchial ridge fairly strong, rounded. Thoracic sternite between fourth pereopods bearing short narrowly rounded, forwardly directed lobe. Posterior half of third pleon segment, and pleon segments four to six with mediodorsal carina, none bearing posterior spine. Telson carrying four pairs of lateral spines on distal third, apex acute (Fig. 4B).

Antennal scaphocerite (Fig. 5F) blade two and one-third times longer than wide, outer margin reinforced by tapering ridge, ending in small spine some distance from apex of scale; basal segment carrying small dorsal hook-like process.

Antennular peduncle segments setose.

Ocular tubercle present on inner margin of proximal half of eye-stalk.

Mandibular palp two-segmented, basal segment one and a half times longer and considerably broader than distal segment; mandible consisting of strong, straight cutting edge and three small teeth on inner face (Fig. 5A).

First maxilliped (Fig. 5B) exopod narrowing abruptly to segmented distal portion. Second maxilliped (Fig. 5E) with merus very expanded, distally rounded, inner margin setose.

Third maxilliped longer than first pereopod (Fig. 4A), merus and ischium expanded, fringed with setae on ventral margin; propodus and carpus relatively slender, of equal length, dactylus broadest at midpoint, tapering distally. First pereopod chela relatively slender, finger and thumb slightly longer than palm; carpus slender; merus and ischium expanded.

Second pereopod (Fig. 4A) longer than first, very slender, finger and thumb of chela equal in length to palm; carpus and merus of equal length.

Third to fifth pereopods missing in holotype.

Petasma slender (Fig. 4C), divided distally into median narrow lobe connected to truncate, rounded portion, and outer smoothly convex lobe bearing spinules.

Inner scale of appendix masculina narrow, elongate, apically rounded, bearing short setae; outer scale broad, longer than inner.

Material

Holotype SAM-A15140 SM 107 1 ♂ CL 50,5 mm TL 150 mm

Remarks

The lack of mediodorsal pleonal spines, the ocular tubercle being proximal in position, the lack of an hepatic spine, and the presence of a mediodorsal keel on pleonal segments 3–6, place this specimen close to *B. iridescens* Bate (see Burkenroad 1936: 45; Roberts & Pequegnat 1970: 42). The latter authors note the difficulty of sorting out the 'Brasiliensis' group of species of *Benthesicymus*, due mainly to a lack of information on intraspecific variation. In spite of this

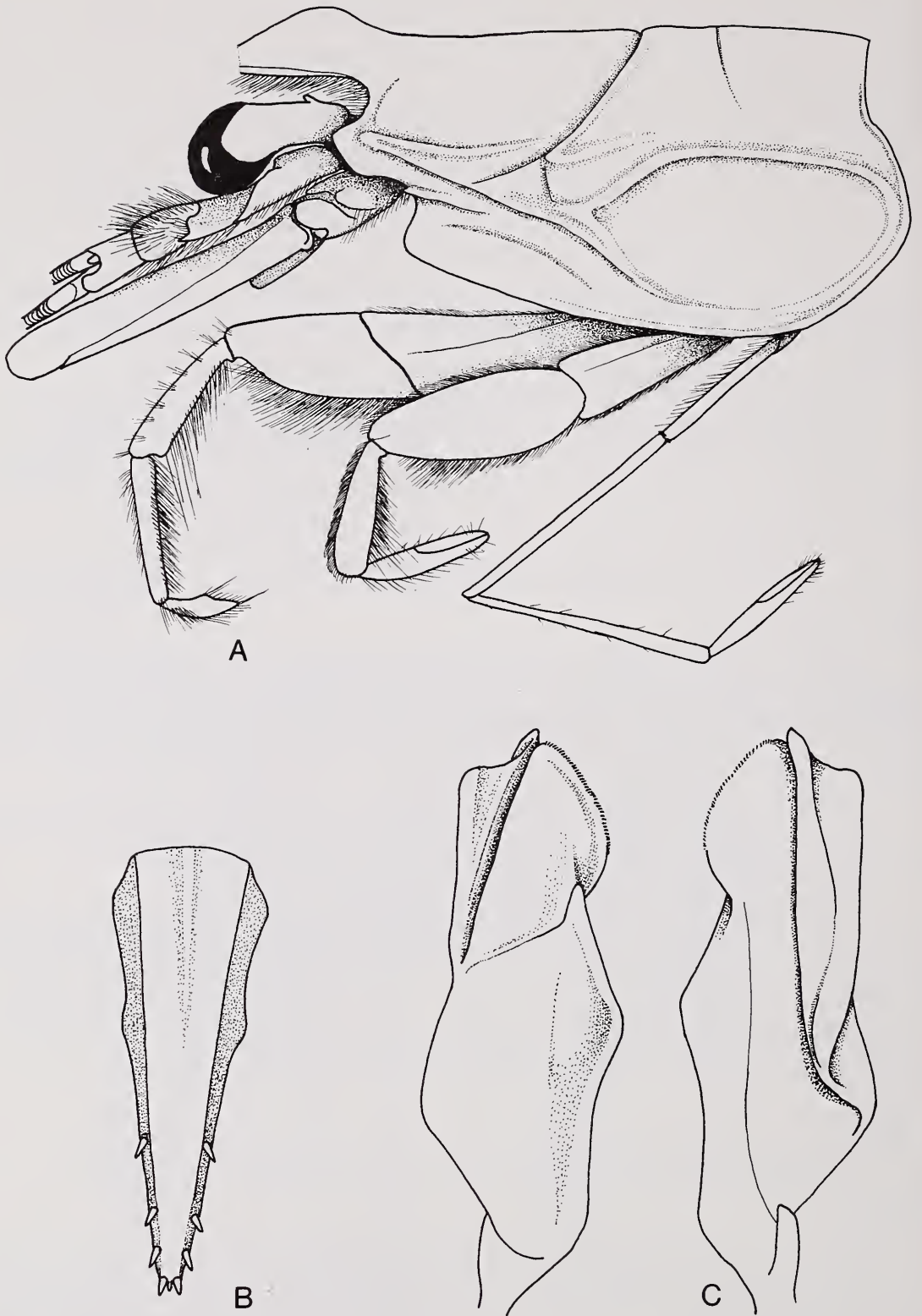


Fig. 4. *Benthescycymus expansus* sp. nov. A. Holotype, carapace in lateral view. B. Telson. C. Anterior and posterior views of petasma.

limitation, the present new species is described, albeit from a single specimen. The species has two features which easily separate it from *B. iridescens*. These are the non-dentate rostrum, and the expanded meri and ischiá of the third maxilliped and first pereopods. (The specific name is derived from this latter feature.) In addition, differences from *B. iridescens* are seen in the petasma, the appendix masculina, the telson, the lack of an antennal spine, and in the carapace sculpture.

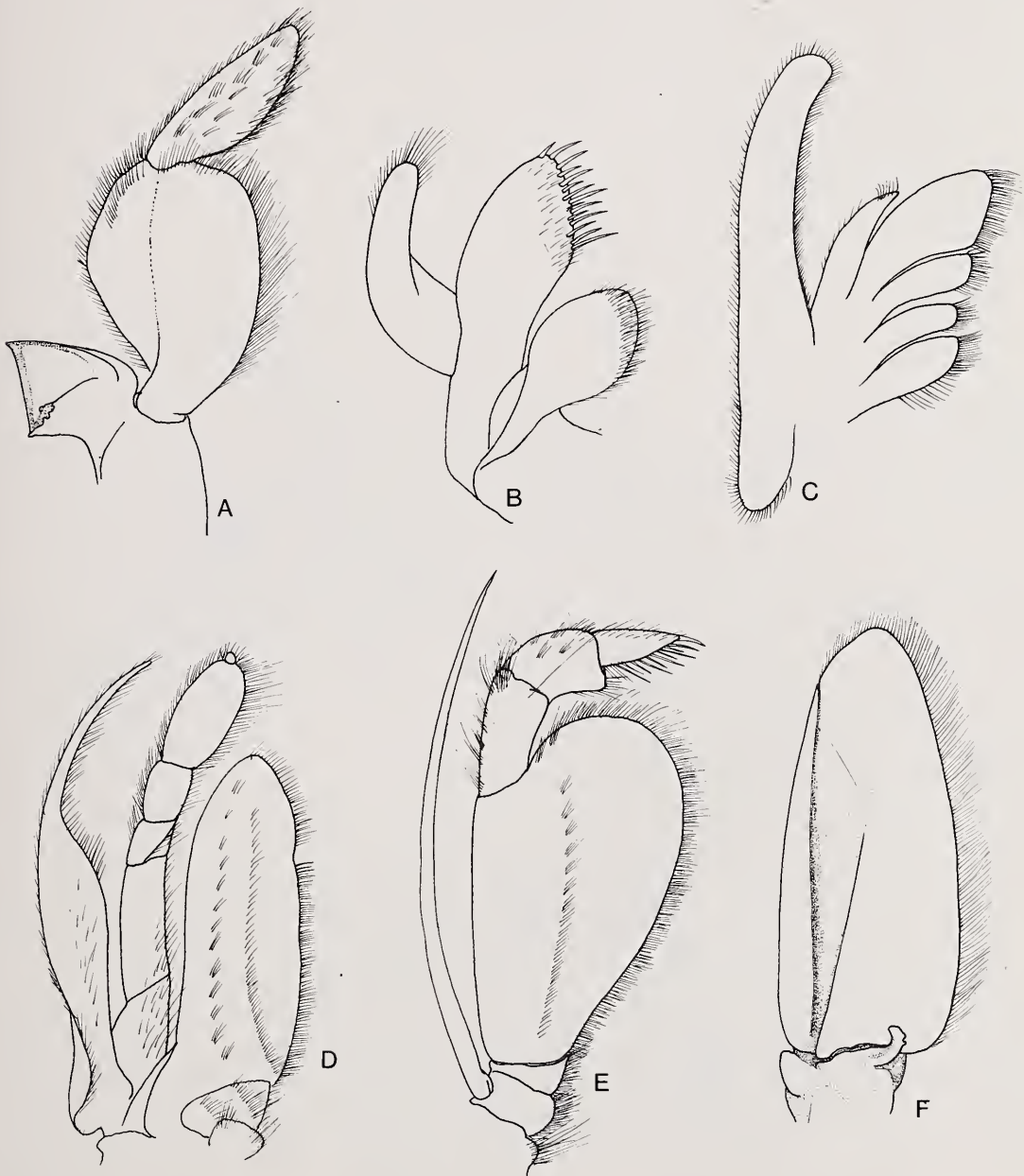


Fig. 5. *Benthesicymus expansus* sp. nov. A. Mandible. B. First maxilla. C. Second maxilla. D. First maxilliped. E. Second maxilliped. F. Antennal scaphocerite.

Benthescymus investigatoris Alcock & Anderson

Fig. 6

Benthescymus investigatoris Alcock & Anderson, 1899: 282. Alcock, 1899: pl. 41 (fig. 2); 1901: 44. Burkenroad, 1936: 25.

Previous records

Saya de Malha (mid Indian Ocean); Andaman Sea; Gulf of Manar; Halmahera Sea; Ceram Sea; Hawaii.

Material

5 ♀♀ CL + RL 24,0 mm × TL 76 to 31,0 mm × 89,5 mm

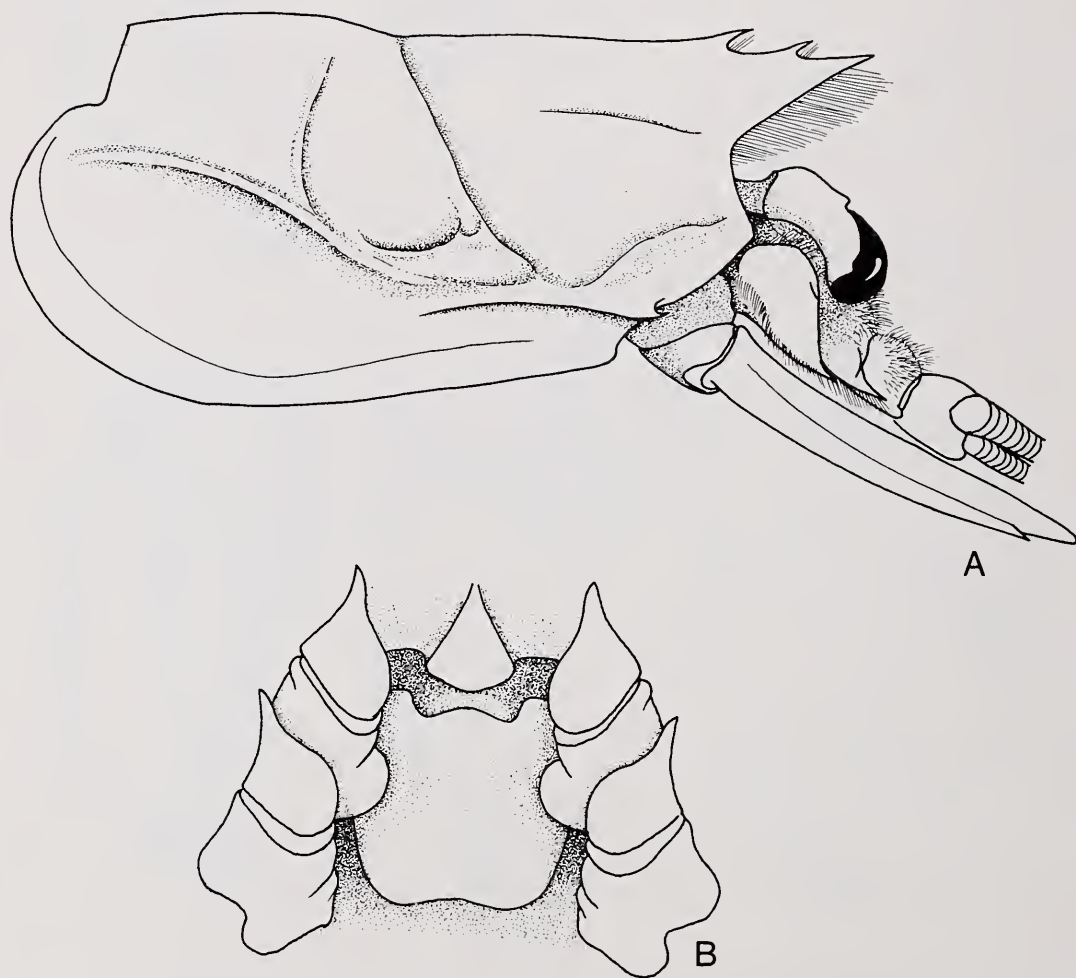


Fig. 6. *Benthescymus investigatoris*. A. Carapace in lateral view. B. Thelycum.

Hymenopenaeus kannemeyeri sp. nov.

Fig. 7

Description

Carapace (Fig. 7A) firm, glabrous. Rostrum about one-third length of carapace directed obliquely upward at angle of about 15° , with eight dorsal teeth (three postorbital) in uninterrupted series, apical tooth very small, ventral margin bearing fringe of setae. Carapace with strong antennal and postantennal spine, each supported by stout carina; hepatic spine lacking keel; branchiostegal spine marginal, supported by keel extending posteriorly to hind margin of carapace; cervical sulcus well developed, with posterior margin of groove at midpoint marked by a short keel, joining the hepatic groove ventrally. Hepatic groove marked posteroventrally by short keel. Branchiocardiac sulcus well developed with supra-branchial portion having a straight, rounded ridge ventrally. First pleon segment dorsally rounded, segment two with posterior half keeled, third to sixth segments fully keeled, segments four to six with short posterior spine. Telson (Fig. 7D) with two fixed spines subterminally, with strong dorsolateral keel extending from spines to proximal margin; outer uropodal ramus just reaching telsonic apex.

Eye reaching slightly beyond midpoint of rostrum, tubercle at midpoint of medial eye-stalk margin (Fig. 7E).

Prosartema of antennule short and rounded, carrying long setae; basal peduncular segment with strong distal spine; stylocerite a strong spine; terminal peduncular segment with lateral setose ridge and thick setose patch dorsally; flagellum circular in cross-section.

Scaphocerite extending well beyond antennular peduncle.

Mandibular palp conspicuous, setose; distal segment slender, tapering, shorter than proximal segment, latter broadly oval.

Third maxilliped extending slightly beyond scaphocerite.

First pereopod with strong distoventral spine on ischium and basis.

Rudimentary exopods on first to fifth pereopods and third maxilliped; epipods on second and third maxillipeds and first to fourth pereopods.

Inner margin of fifth pereopod basis in male with anteriorly directed triangular lobe above genital aperture.

Thelycum of female (Fig. 7C) relatively simple, sternites of fourth and fifth pereopods with rounded, convex central areas.

Petasma divided distally into two lobes; inner lobe longer than outer, truncate, with distal hollowed portion produced laterally into triangular point; outer lobe also truncate, with posterior strengthening ridge. Appendix masculina of second pleopod (Fig. 7F) about half length of appendix interna; both bearing marginal spinules; leaf-like expansion present on outer side of base of endopod.

Material

Holotype SAM-A15141 SM 38 ♂ CL + RL 43,5 mm TL 119,5 mm

Allotype SAM-A15141 SM 38 ♀ CL + RL 39,8 mm TL 110,8 mm.

Remarks

The present specimens with the rostral and post-rostral teeth not separated, with a strong branchiostegal spine, and lacking a pterygostomial spine, fall into Burkenroad's (1936) Group II.

This group includes *H. robustus*, *H. modestus*, *H. lucassi* and *H. muelleri*. *H. kannemeyeri* differs from all these in the structure of the petasma and thelycum. The latter most closely resembles that of *H. fattahi* Ramadan, 1938 (as figured by Crosnier & Forest 1973, fig. 85g-h) but the petasma of *H. fattahi* differs markedly from the present species.

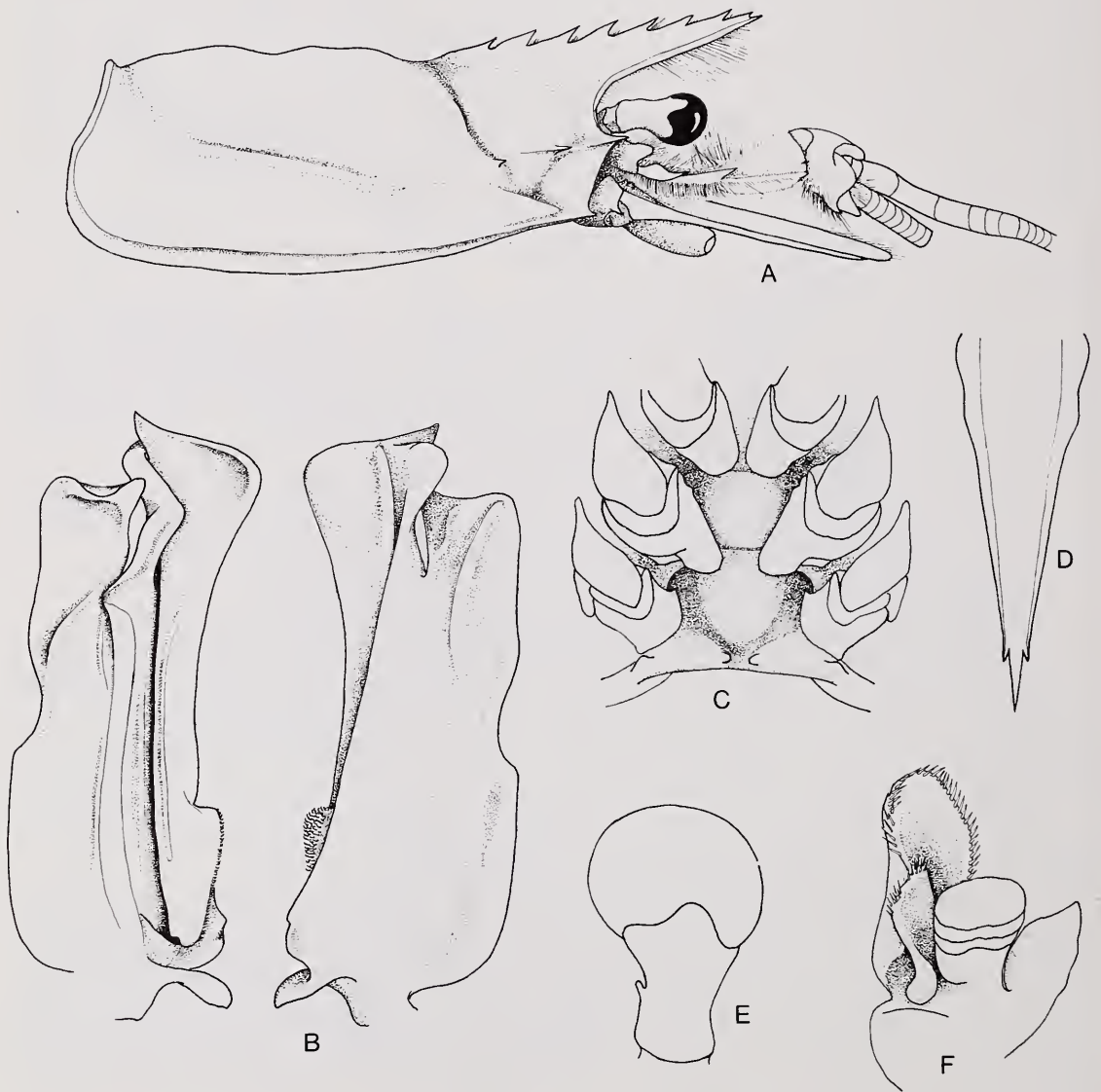


Fig. 7. *Hymenopenaeus kannemeyeri* sp. nov. A. Carapace in lateral view. B. Anterior and posterior view of petasma. C. Thelycum. D. Telson. E. Eye. F. Pleopod 2, ♂, appendix interna and appendix masculina.

The species is named for S. X. Kannemeyer, of the Department of Marine Biology, South African Museum, in appreciation for his invaluable help in the *Meiring Naude* cruises.

Genus *Funchalia* Johnson

As *Funchalia villosa* and *F. woodwardi* have been confused in the past, the petasma and thelycum of each is figured, and all the South African Museum's holdings of both species are listed.

Funchalia (Funchalia) villosa (Bouvier)

Fig. 8C-D

Funchalia (Funchalia) villosa: Burkenroad, 1936: 129. Crosnier & Forest, 1973: 296.

Previous records

Eastern and western North Atlantic; Caribbean; southern central South Atlantic.

Material and South African records

SAM-A15368	SM 18	1 ♀	CL 22,8 mm
SAM-A15369	SM 33	1 ♀	CL 21,0 mm
SAM-A15370	SM 88	1 ♂ 1 ♀	CL 13,0 mm, 14,2 mm
SAM-A15371	SM 111	1 ♂	CL 18,4 mm
SAM-A13195	off Natal,	30°30'S 31°45'E	200 m 1 ♂
SAM-A13197	off Natal,	26°30'S 42°40'E	500 m 1 ♂
SAM-A13198	off Agulhas Bank,	37°10'S 21°50'E	500 m 1 ♂
SAM-A13236	off Natal,	31°44'S 44°35'E	500 m 3 ♂♂

Funchalia (Funchalia) woodwardi Johnson

Fig. 8A-B

Funchalia (Funchalia) woodwardi: Barnard, 1950: 609, fig. 112. Gordon & Ingle, 1956: 478 Paulinose, 1974: 433.

Previous records

Eastern North Atlantic; Mediterranean; south-eastern South Atlantic.

South African records

SAM-A8481	off Table Bay,	from stomach of stock fish	9 ♂♂
SAM-A10914	off Cape Peninsula,	from tunny stomach	several ♂♂ & ♀♀
SAM-A10995	off Cape Peninsula,	from tunny stomach	1 ♂
SAM-A11025	off Dassen Island,	from tunny stomach	25 ♂♂ 19 ♀♀
SAM-A11027	off Cape Peninsula,	several	♂♂ & ♀♀
SAM-A12014	off Dassen Island,	500 m	2 ♂♂ 2 ♀♀
SAM-A12482	Vema Seamount,	from tunny stomach	60 immature ♂♂ & ♀♀
SAM-A13196	off Cape Peninsula,	250 m	3 ♀♀
SAM-A13237	off Cape Peninsula,	350 m	7 ♂♂ 7 ♀♀
SAM-A13238	off Cape Peninsula,	500 m	2 ♂♂ 3 ♀♀

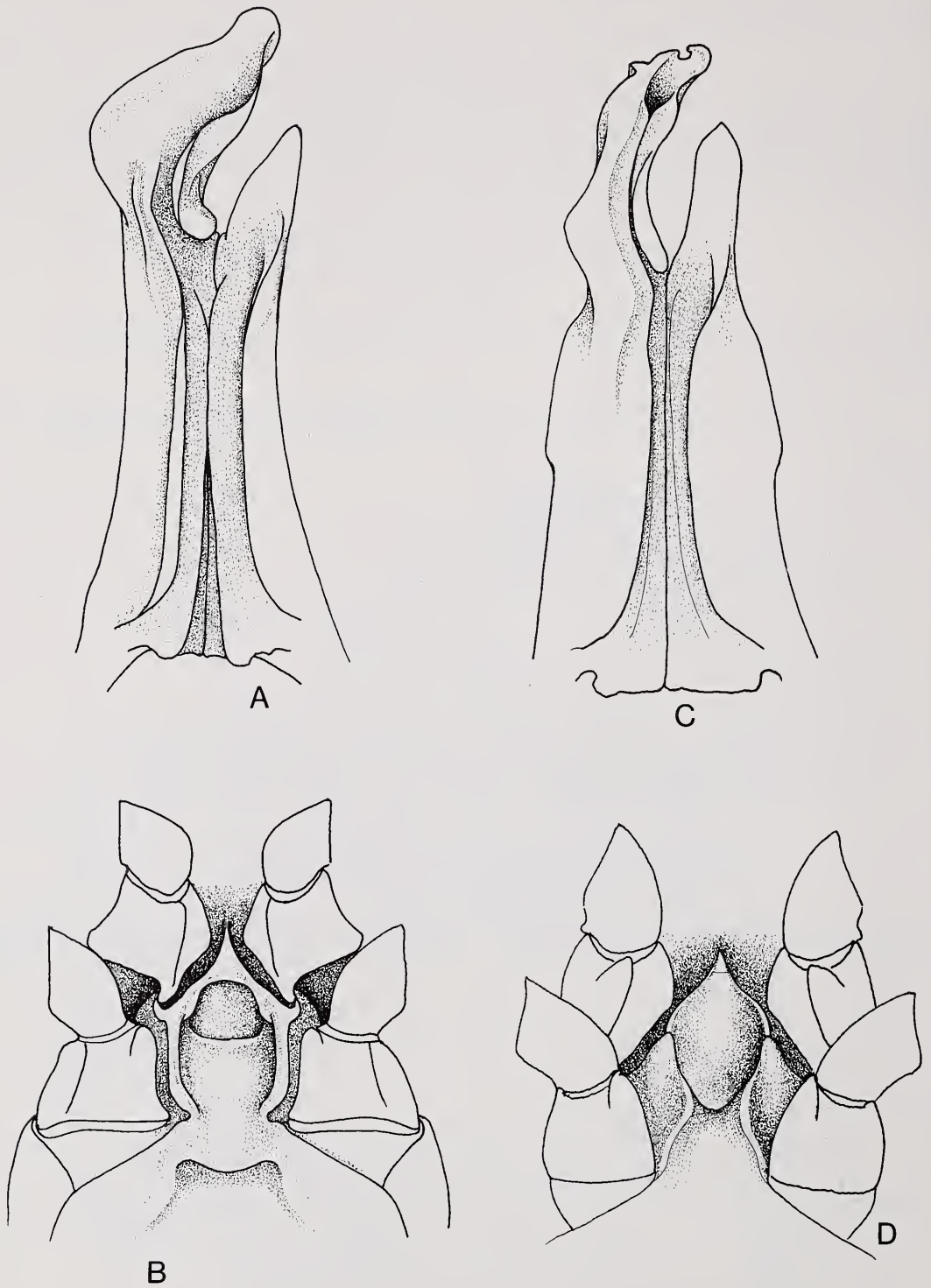


Fig. 8. A. *Funchalia woodwardi* petasma. B. *F. woodwardi* thelycum. C. *Funchalia villosa* petasma. D. *F. villosa* thelycum.

Family **Sergestidae***Sergestes (Sergia) talismani* Barnard*Sergestes talismani* Barnard, 1947: 384.*Sergestes (Sergia) talismani*: Crosnier & Forest, 1973: 325, figs 111a-c, 112a-b.*Previous records*

Cape Verde Islands; Portuguese Guinea; Gabon; Congo.

Material

See species list.

Remarks

This would seem to be the first record of the species from the Indian Ocean.

CARIDEA

Family **Oplophoridae***Acanthephyra armata* Edwards

Fig. 9B

Acanthephyra armata: Bate, 1888: 744, pl. 125 (fig. 2). De Man, 1920: 61, pl. 6 (fig. 13).
Chace, 1936: 27.*Previous records*

West Indies; Bali Sea; Straits of Macassar; off Kei Islands; off Banda Island.

Material

SAM-A15154 SM 38 4 ♂♂ 4 ♀♀

SAM-A15150 SM 58 3 ♂♂ 3 ♀♀

♂♂ CL 16,9 mm-29,0 mm RL 27,0 mm-37,5 mm TL 92,0 mm-137 mm

♀♀ 24,5 mm-33,0 mm 34,7 mm-35,2 mm 121 mm-146 mm

Acanthephyra indica Balss

Fig. 9A

Acanthephyra indica Balss, 1925: 264, fig. 34. Chace, 1936: 26.*Acanthephyra* sp. De Man, 1920: 68, pl. 6 (fig. 16).*Previous records*

Between Sumatra and Ceylon; Banda Sea; off Ambon.

Material

See species list.

3 ♂♂ 1 ♀ 3 ovig. ♀♀ ♂ CL 10,0 mm-10,2 mm ♀ CL 10,9 mm-13,1 mm

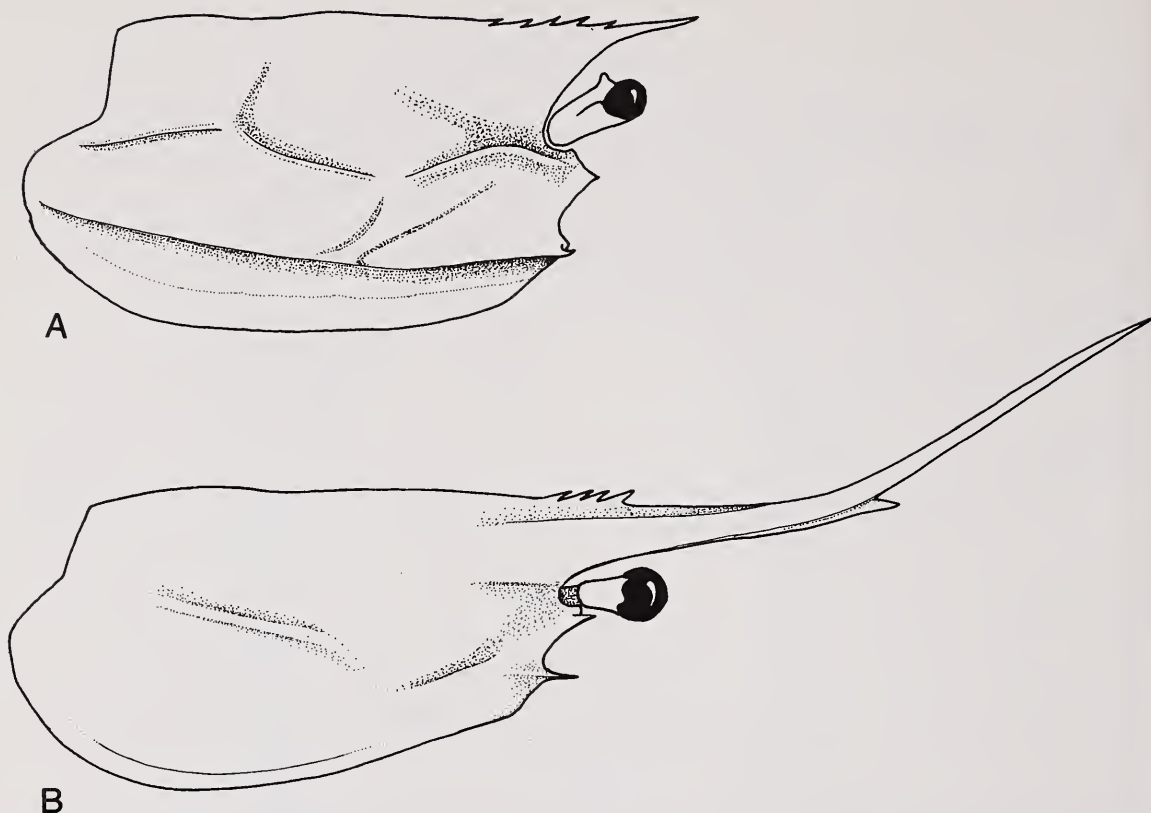


Fig. 9. A. *Acanthephyra indica*. B. *Acanthephyra armata*.

Family Pasiphaeidae

Eupasiphae gilesii (Wood-Mason & Alcock)

Fig. 10B

Parapasiphae (*Eupasiphae*) *gilesii* Wood-Mason & Alcock, 1893: 166. Alcock, 1892: pl. 3 (fig. 8); 1901: 66.

Eupasiphae gilesii: Holthuis, 1955: 36. Tirmizi, 1969: 214, figs 1-4. Foxtan, 1970: 958.

Eupasiphae gilesi: Fisher & Goldie, 1961: 78. Crosnier & Forest, 1973: 150, fig. 44.

Previous records

Bermuda; Cape Verde Islands; Canary Islands; Madeira; Arabian Sea; Gulf of Oman; Andaman Sea.

Material

SAM-A15151 SM 105 1♂ CL + RL 32,4 mm TL 97 mm

Pasiphaea sivado (Risso)

Fig. 10A

Pasiphaea sivado: Wood-Mason & Alcock, 1893: 161. Alcock, 1892: pl. 3 (fig. 6); 1901: 59. Sivertsen & Holthuis, 1956: 29. Crosnier & Forest, 1973: 133.

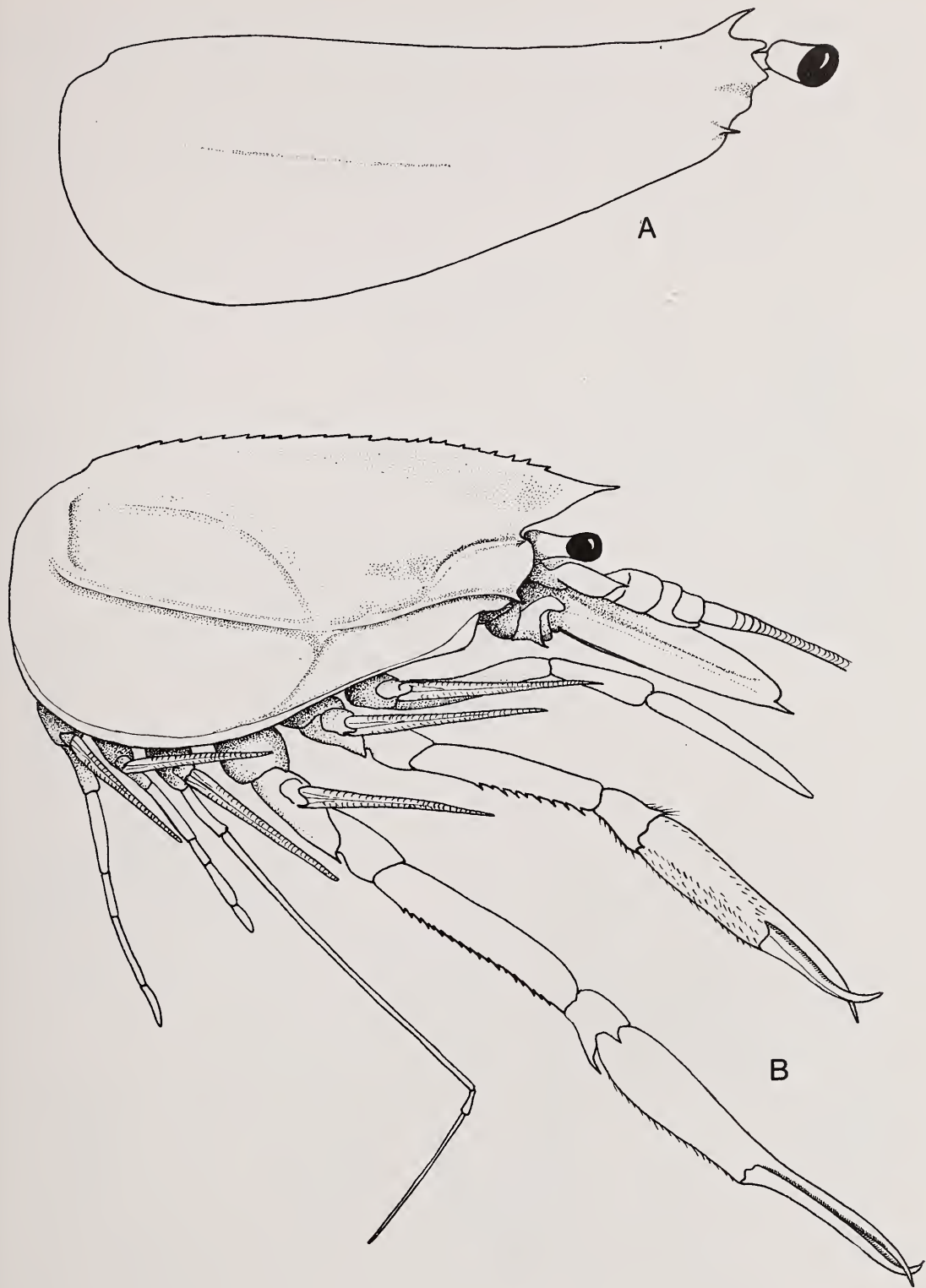


Fig. 10. A. *Pasiphae sivado*. B. *Eupasiphae gilesi*.

Previous records

Eastern North Atlantic; Mediterranean; Red Sea; Bay of Bengal; Andaman Sea.

Material

SAM-15153 SM 63 2 ♀♀

SAM-A15152 SM 85 1 ♀

♀♀ CL 10,0 mm-14,5 mm

Pasiphaea meiringnaudei sp. nov.

Figs 11-14

Description

Carapace (Fig. 11) mid-dorsally carinate for almost its entire length. Rostrum a postfrontal triangular spine directed obliquely upward, only rarely reaching beyond anterior carapace margin. Anterior margin of rostrum straight, almost vertical, apparently more variable in females than in males (Fig. 13). Orbital angle a rounded lobe; branchiostegal spine directed outwards; supra-branchial ridge rounded, not reaching posterior carapace margin.

Second to sixth abdominal segments dorsally keeled, not ending in a posterior spine; sixth segment with curved lateral ridge. Telson shorter than

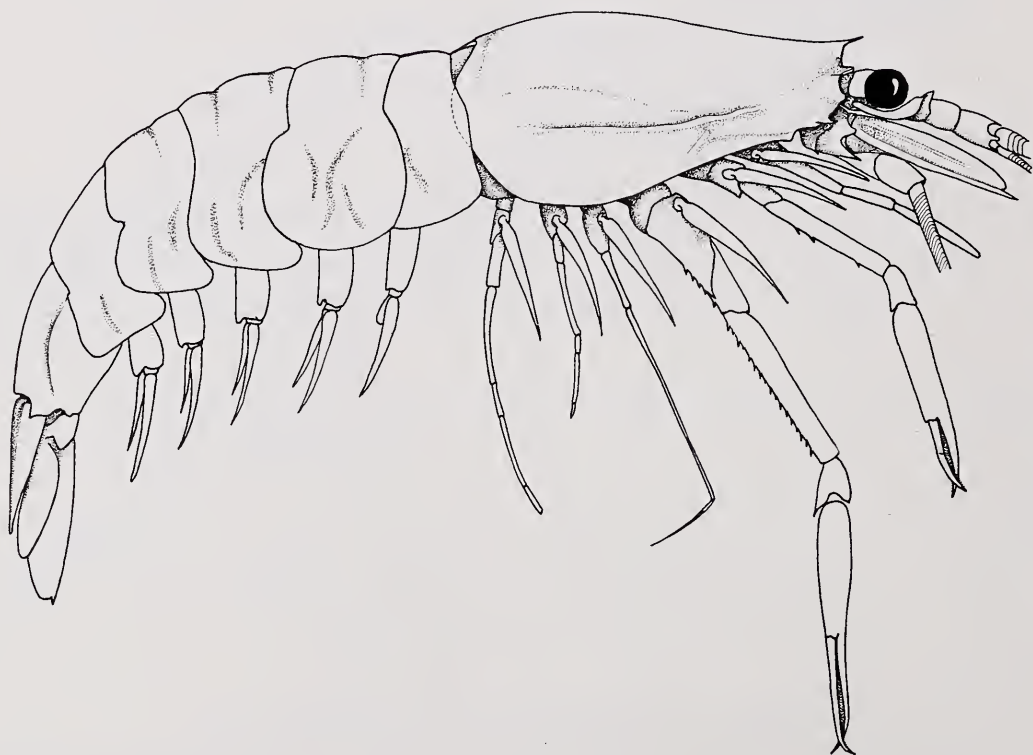


Fig. 11. *Pasiphaea meiringnaudei* sp. nov. Holotype in lateral view,

uropodal endopod, dorsally grooved, distally forked, with seven spines on inner margin of sinus (Fig. 12I).

Antennular peduncle extending for two-thirds of scaphocerite (Fig. 11); stylocerite (Fig. 12G) broadening distally, twisted, apically acute, dorsolateral flagellum with about eighteen enlarged basal segments in male and female.

Antennal base bearing ventrodistal spine.

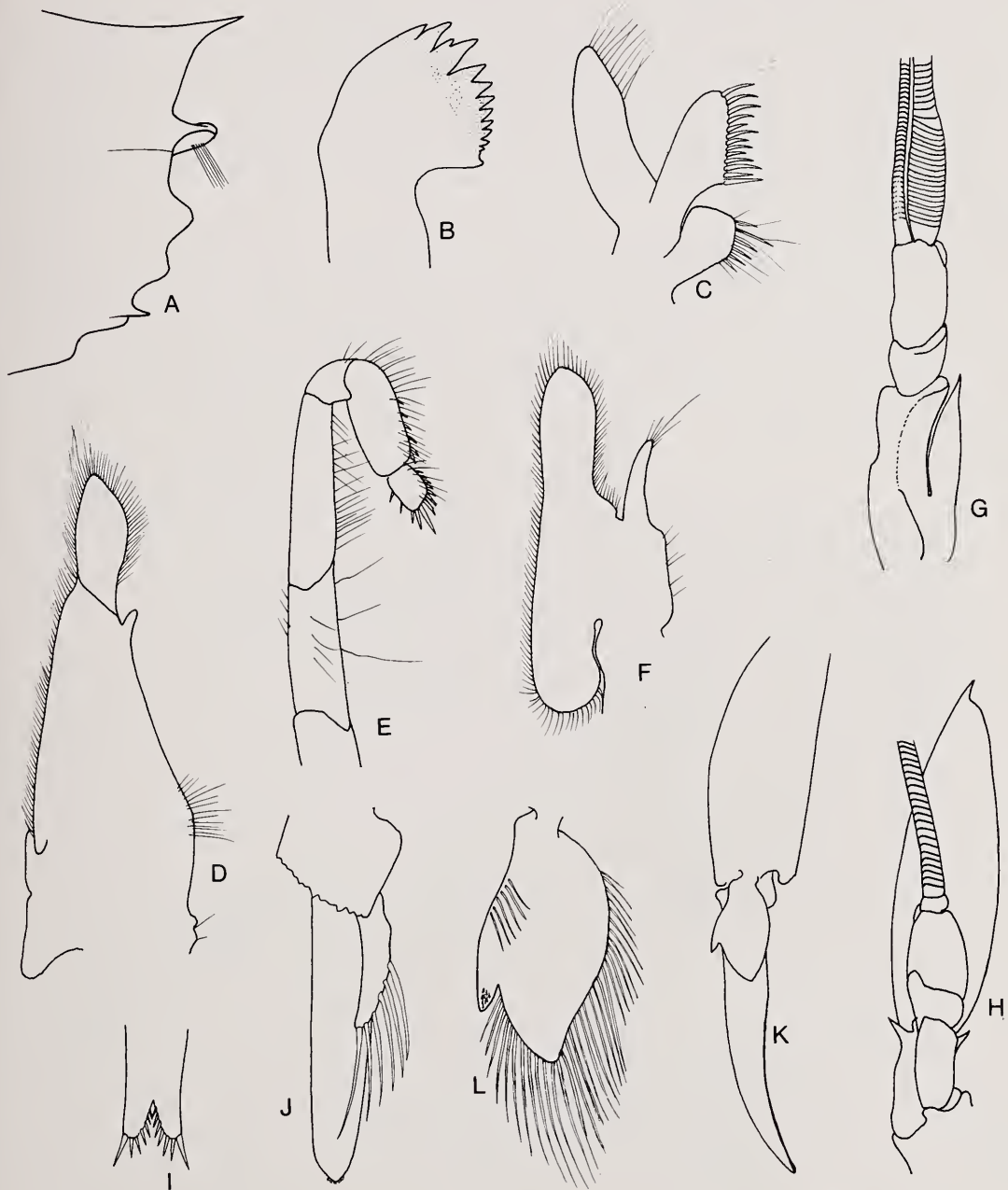


Fig. 12. *Pasiphae meiringnaudei* sp. nov. A, Anterior carapace and rostrum. B, Mandible. C, First maxilla. D, First maxilliped. E, Second maxilliped. F, Second maxilla. G, Antennular base. H, Antennal base. I, Telsonic apex. J, Pleopod 2, ♂, appendix interna and appendix masculina. K, Pleopod 1, ♂. L, Pleopod 1, ♂, endopod.

Third maxilliped just reaching to end of scaphocerite.

First pereiopod overreaching scaphocerite by half length of palm plus fingers (Fig. 11); palm longer than fingers; merus with one to four ventral spines; basis with ventral distal triangular spine.

Second pereiopod overreaching scaphocerite by half length of palm plus fingers; palm equal in length to fingers; carpus with broad ventral tooth; merus with fifteen to twenty-one ventral spines; ischium with one spine, basis with four to seven spines (Fig. 14B).

Third pereiopod overreaching anterior carapace margin by about half length of propodus plus dactylus; very slender; dactylus tapering; propodus one-third length of dactylus; carpus very elongate, almost four times length of merus.

Fourth pereiopod reaching to midpoint of carpus of third pereiopod.

Fifth pereiopod longer than fourth pereiopod, reaching to end of carpus of third pereiopod.

Endopod of first pleopod ♂ short, with triangular process on inner margin bearing very small denticles (Fig. 12L).

Second pleopod ♂ appendix masculina twice length of appendix interna, latter curved, with seven marginal setae (Fig. 12J).

Uropodal endopod two-thirds length of exopod, latter with small terminal spine on outer margin.

Material

Holotype	SAM-A15316	SM 107	ovig. ♀	CL 57,0 mm	TL 166 mm
SM 38	1 ♂	CL 39,9 mm	TL 126 mm		
SM 58	4 ♂♂	CL 35,5 mm–36,3 mm	TL 109 mm–110 mm		
SM 107	5 ovig. ♀♀	50,0 mm–58,0 mm	153 mm–168 mm		
SM 91	1 ♀	42,0 mm	125 mm		
SM 28	1 ♀	34,5 mm	108 mm		
SM 40	2 ♀♀	31,8 mm–42,4 mm	95–130 mm		

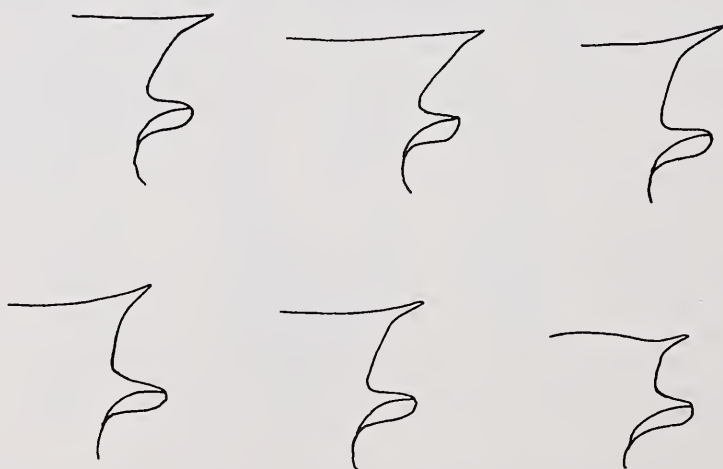


Fig. 13. *Pasiphae meiringnaudei* sp. nov. rostral variation. Top row, ovigerous ♀♀. Bottom row, ♂♂. Bottom right, rostrum modified by ellobiopsid parasites.

Remarks

J. C. Yaldwyn (National Museum of New Zealand) has kindly supplied most of the following information on the closely related species of *Pasiphaea*, from an as yet unpublished review of the genus by him and F. A. Chace Jr (Smithsonian Institution). The combination of three characters, viz. the distally forked telson, carinate carapace and abdomen, and basis of the second pereopod ventrally spined, places the present species in a group with four previously described species. These are *P. multidentata* Esmark, *P. tarda* Kröyer, *P. rathbunae* Stebbing, and *P. barnardi* Yaldwyn. The rostral shape of *P. meiringnaudei* differs from these four, but comes closest to *P. barnardi*. The finger-to-palm ratio of the first and second pereopods, however, differs from Yaldwyn's species where the fingers of the first pereopod are subequal to the palm and the fingers of the second pereopod are distinctly longer than the palm. *P. meiringnaudei* overlaps with *P. tarda* (as *P. princeps* in Kemp 1910, pl. 4 (figs 1-7)) in the spine counts of the first and second pereopods, but differs markedly in the rostral shape and in the relative lengths of the thoracic appendages.

The species is named for the R/V *Meiring Naude*.

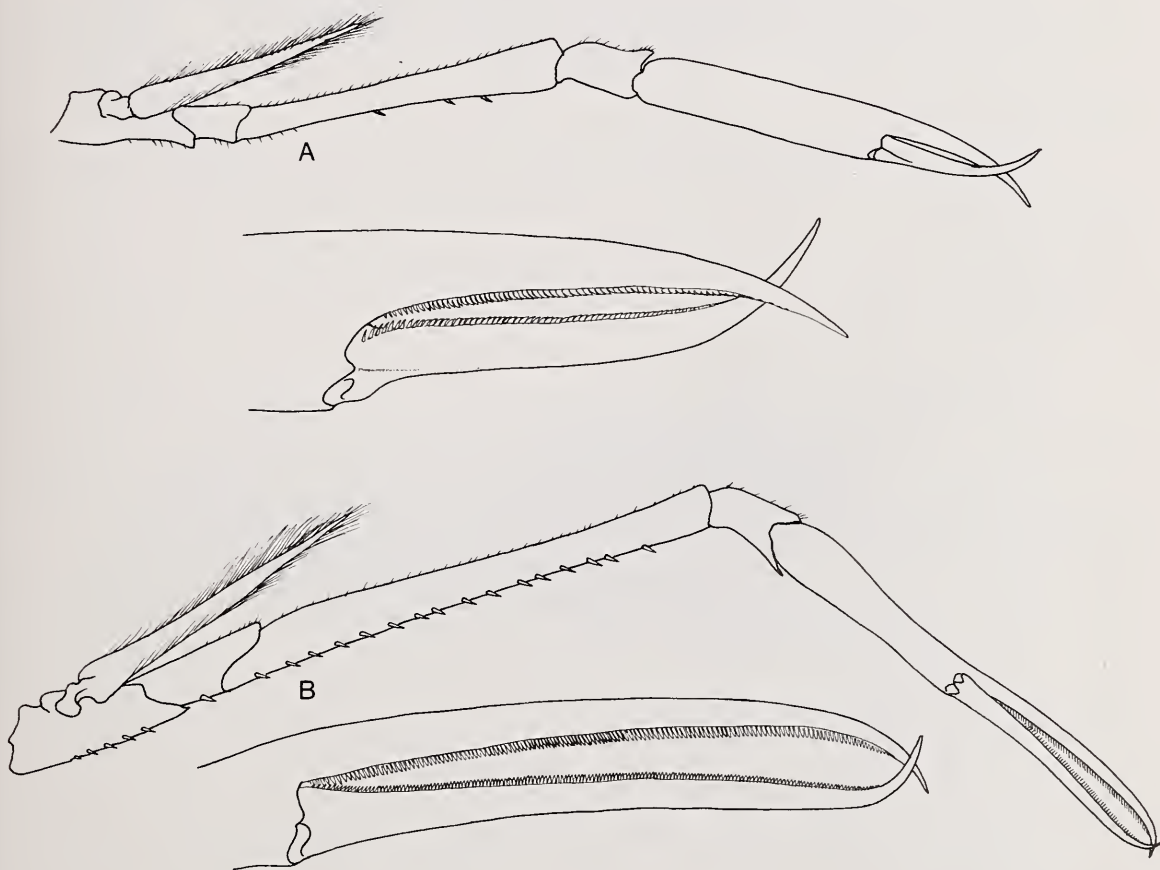


Fig. 14. *Pasiphae meiringnaudei* sp. nov. A. First pereopod, with chela further enlarged.
B. Second pereopod, with chela further enlarged.

Family **Pandalidae***Heterocarpus dorsalis* Bate

Fig. 15A

Heterocarpus dorsalis: De Man, 1920: 156, 171, pl. 15 (fig. 43). Barnard, 1950: 684, fig. 127a*Previous records*

Off Durban; off East Africa; East Indies; Japan.

Material

See species list.

7 ♂♂	CL 20 mm–41 mm	RL 35 mm–48 mm	TL 98 mm–179 mm
2 ♀♀	27 mm–42 mm	35 mm–44 mm	126 mm–171 mm

Remarks

The ovigerous female of total length 171 mm is at least 20 mm longer than the largest ovigerous female recorded by De Man (1920).

Heterocarpus laevigatus Bate

Fig. 15B

Heterocarpus laevigatus Bate, 1888: 636, pl. 112 (fig. 3). Stebbing, 1914: 40. De Man, 1920: 154, 159, pl. 13 (fig. 37). Barnard, 1950: 684, fig. 127b. Crosnier & Forest, 1973: 195, fig. 61c.*Previous records*

Cape Verde Islands; Madeira; off East London; Arabian Sea; East Indies; Hawaii.

Material

See species list.

2 ♂♂	CL 65 mm–74 mm	RL 28 mm–38 mm	TL 121 mm–160 mm
3 ♀♀	64 mm–105 mm	36 mm–51 mm	121 mm–200 mm

Remarks

The East London record was of an immature specimen measuring approximately 63 mm TL.

Heterocarpus tricarinatus Alcock & Anderson

Fig. 15C

Heterocarpus tricarinatus: De Man, 1920: 155, 161, pl. 13 (fig. 38), pl. 14 (fig. 38). Calman, 1939: 204. Barnard, 1950: 682, fig. 127c–d.*Previous records*

Off East London; Arabian Sea; East Indies.

Material

SAM-A15264	SM 22	1 ♂	CL 35 mm	RL 30 mm	TL 135 mm
			ovig. ♀ 37 mm	32 mm	146 mm



A



B



C

Fig. 15. A. *Heterocarpus dorsalis*. B. *Heterocarpus laevigatus*. C. *Heterocarpus tricarinatus*.

Remarks

Using both Barnard's (1950) and De Man's (1920) keys to the genus *Heterocarpus*, *H. tricarinatus* is arrived at. The genus is obviously variable with regard to the rostral dentition, proportions of the pereopodal dactyli, and the lengths of the carapace keels. This led Calman (1939) to doubt the validity of this species, suggesting that it might be synonymous with *H. gibbosus* Bate. The variability of this latter species is well illustrated by De Man (1920). The present material could well be placed in Bate's species, but until this species complex is resolved, the lower carapace keel reaching back about two-thirds of the carapace length necessitates placing these two specimens in *H. tricarinatus*.

Family **Glyphocrangonidae***Glyphocrangon dentatus* Barnard

Glyphocrangon gilesii var. *dentata* Barnard, 1926: 128.

Glyphocrangon mabihissae Calman, 1939: 217, fig. 8.

Glyphocrangon dentarus Barnard, 1947 (typ. err.): 387.

Glyphocrangon dentatus Barnard, 1950: 722, fig. 134h.

Previous records

Off Mozambique, 540 m; off Zanzibar, 640–658 m.

Material

8 ♂♂ 1 ♀ 8 ovig. ♀♀, see species list.

♂♂	CL 16,5 mm–19,8 mm	RL 17,8 mm–22 mm	TL 73 mm–85 mm
ovig. ♀♀	19,1 mm–23 mm	20,8 mm–27,5 mm	83 mm–102 mm

Remarks

Only slight differences are apparent between Calman's specimens from Zanzibar and the present material. These differences are to some extent probably due to individual variation, as well as to variations between populations. The spine on the midpoint of the posterior antennal carina is present in some of the present specimens, absent in others, while the row of small tubercles just lateral to the submedian carina seen in the Zanzibar specimens is represented by one or two almost indistinct tubercles. Although the rostral length always exceeds the carapace length, the ratio is variable.

Glyphocrangon regalis Bate

Fig. 16

Glyphocrangon regalis Bate, 1888: 517, pl. 93 (figs 3–4). De Man, 1920: 220.

Description

Rostrum curved ventrally, with apex upturned, slightly less than two-thirds carapace length, with pair of lateral rostral teeth above eyes, second pair of spines in postorbital position. Antennal spine strong, directed forward, separated

by short, curved carapace margin from longer branchiostegal spine directed anteroventrally. Anterior submedian carinae consisting of seven elongate tubercles. Posterior submedian carinae consisting of four elongate tubercles. Row of small, rounded tubercles median to both anterior and posterior submedian carinae. Small median spine at base of rostrum flanked by two posterolateral spines. Anterior antennal carina forming wing-like flattened structure ending in outward-pointed strong spine. Posterior antennal carina situated some distance above anterior antennal carina, ending anteriorly in outwardly directed spine, not as strong as that of anterior carina; at about midpoint, a slight indication of a notch, never strong enough to be called a spine or tubercle. Anterior intermediate carina not well defined, consisting of three or four large irregularly placed tubercles. Posterior intermediate carina consisting of four or five elongate tubercles. Area between anterior submedian and anterior intermediate carinae with two rows of small tubercles; three rows of tubercles between posterior submedian and posterior intermediate carinae. Area between anterior antennal carina and lateral groove carrying a scattering of small rounded tubercles. Areas between posterior antennal and posterior lateral carinae also carrying irregular

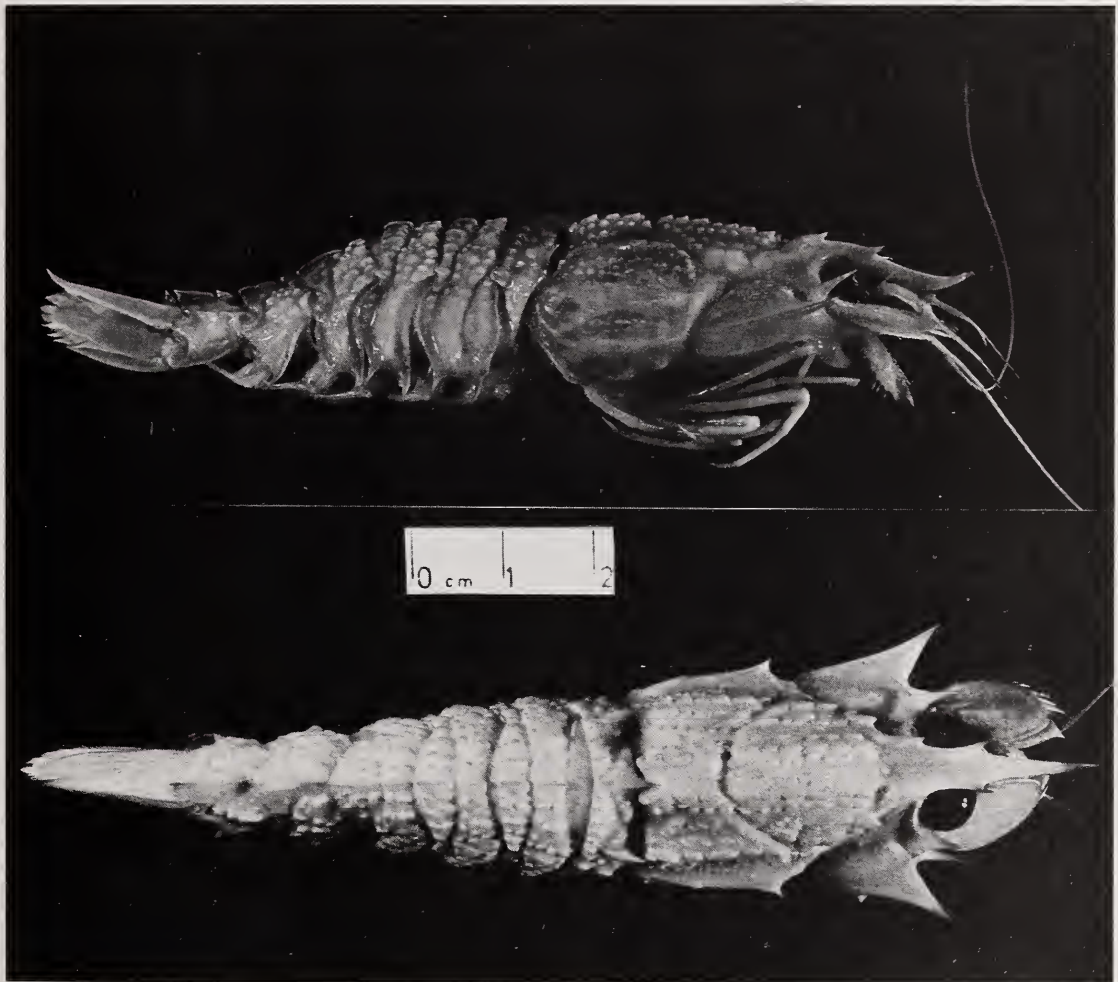


Fig. 16. *Glyphocrangon regalis*.

scattering of rounded tubercles. Anterior and posterior lateral carina entire, not tuberculate. Sublateral carina only distinct in posterior region, consisting of a foveolate ridge. Region between sublateral carina and margin bearing a foveolate band.

Abdomen (excluding telson) equal in length of carapace plus rostrum. Median carina of abdominal segments strong, only on first segment forming a forwardly directed spine. Pleura of first segment considerably shorter than second, with forwardly directed spine. Pleura of second segment ventrally bispinose, spines of equal strength. Pleura of third segment ventrally bispinose, anterior spine longer than posterior. Pleura of fourth segment ventrally bispinose, spines subequal. Pleura of fifth segment bispinose, spines directed posteroventrally. Sixth abdominal segment ending posteroventrally in strong spine. Telson with median spine at base, elongate triangular, with strong dorsolateral keel, apex acute, flexed slightly dorsally.

Eyes well developed, with large black corneas, small spinose tubercle on inner distal margin of eye-stalk.

Scaphocerite ovate, fringed with setae, lacking any spine on inner margin.

Second pereopods unequal, left shorter and slightly squatter than right, carpus of right (30–31 segments) considerably longer than left (19 segments), chela markedly smaller.

Third pereopod dactylus lanceolate, oval in cross section, one-third length of propodus.

Fourth pereopod dactylus slightly more than one-third length of propodus, dorsally grooved.

Fifth pereopod dactylus similar to fourth.

Previous records

Banda Island; off Makassar; Kermadec Island; Fiji; Paternoster Island.

Material

5 ♂♂ 7 ♀♀ 10 ovig. ♀♀, see species list.

♂♂ CL 20,5 mm–29,9 mm RL 16,5 mm–19,9 mm TL 82,5 mm–108 mm
ovig. ♀♀ 29,3 mm–34,9 mm 17,8 mm–21,0 mm 108 mm–128 mm

Remarks

The species recorded by Wood-Mason (1891) as *G. investigatoris* and *G. investigatoris* var. *andamanensis*, was stated by De Man (1920) to be possibly synonymous with *G. regalis*. Wood-Mason's species, however, shows some differences, e.g. in the degree of 'flare' of the spine of the postantennal carina, the possession of midline tubercles on the rostrum which together suggest that this is not the same species. Examination of the 'Challenger' types of *G. regalis* reveal almost no differences from the present material.

ACKNOWLEDGEMENTS

In addition to the people and institutions thanked in the introductory paper of this series, I should like to thank Mr S. X. Kannemeyer of the South African Museum for the photographs, Dr R. B. Manning of the Smithsonian Institution for the loan of *Pasiphaea* material, Dr J. Yaldwyn of the National Museum of New Zealand and Dr F. A. Chace Jr of the Smithsonian Institution for information on *Pasiphaea*, and Prof. J. H. Day of the University of Cape Town and Dr J. Yaldwyn for reading the manuscript and for their many useful criticisms.

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